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PYRACANTHA (ROSACEAE) NATURALIZED IN TEXAS AND THE SOUTHEASTERN UNITED STATES

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ABSTRACT

Pyracantha coccinea, *P. fortuneana*, and *P. koidzumii* are recognized to occur outside of cultivation in Texas, and herbarium collections are cited in documentation of their occurrence in Texas and in other states of the southeastern USA. A key includes these and two other species: *P. angustifolia*, a very distinctive species that is cultivated in the southeastern USA, and *P. atalantioides*, a species that has sometimes been mistakenly identified in the same region. The taxonomic distinction between *P. fortuneana* and *P. crenulata* is problematic.
KEY WORDS: *Pyracantha*, naturalized, Texas, southeastern USA

With stimulation by the recent report and clarification by Serviss (2009) for Arkansas and by the need to accurately portray the naturalized non-native flora of Texas (Nesom 2009a, 2009b), an overview of introduced *Pyracantha* M. Roemer in the state is presented here. To broaden the context, taxa are included from other states in the southeastern USA, as represented by collections in BRIT-SMU-VDB, GH, MO, and TEX-LL.

Pyracantha was not included in the floristic account for Texas by Correll and Johnston (1970). Johnston's floristic update (1990) included the genus with the line "732. Add: *Pyracantha coccinea* M.J. Roemer" — without other documentation. Turner et al. (2003) mapped one species of *Pyracantha* for Texas (15 counties), identifying it as *P. coccinea*. For the southeastern USA, Robertson (1974) noted only *P. coccinea* and *P. koidzumii* (Hayata) Rehder as naturalized, the latter only from South Carolina, as reported by Clark et al. (1973). The PLANTS Database (USDA, NRCS 2009) indicates that these two as well as *P. fortuneana* are becoming more widely naturalized in the Southeast.

The key below allows distinction of the three species naturalized in Texas and the southeastern USA (*P. coccinea*, *P. fortuneana*, and *P. koidzumii*) and also includes two other species: *P. angustifolia*, a distinctive species cultivated in the southeastern USA, and *P. atalantioides*, a species sometimes mistakenly identified in the same region. As with other commonly cultivated species, placing a plant in one or another species may be an artificial classification, because hybrids of *Pyracantha* are sold and planted and cultivars often apparently cannot be unequivocally assigned to a single species in its typical expression. Several cultivars are explicitly indicated by Meyer et al. (1994) to be of hybrid origin (*P. koidzumii* x *P. fortuneana*; *P. koidzumii* x *P. coccinea*).

There appparently are only about 10 or fewer species of *Pyracantha* in the world, and no critical overview of the genus has been published. Nine species occur in China (Gu & Spongberg 2003). Compilations by Meyer et al. (1994) and Egolf and Andrick (1995) indicate that hundreds of cultivars exist.

1. Leaf blades 4–8 mm wide, abaxially densely and persistently tawny-puberulent to puberulent-villous, margins entire ..... **Pyracantha angustifolia**
1. Leaf blades 5–25 mm wide, abaxially glabrous or quickly glabrescent, margins entire or crenate to crenulate-serrate or apiculate.

2. Leaf margins entire or occasionally 1–3(5) very shallow teeth per side, apices rounded to truncate, usually retuse ..... **Pyracantha koidzumii**
2. Leaf margins usually crenate to crenulate or crenulate-serrate with numerous teeth or apiculae, apices mostly acute or obtuse to rounded or truncate, rarely retuse.

3. Leaf blades narrowly elliptic to rhombic-elliptic, sometimes narrowly so, apices acute, margins crenate to crenulate ..... **Pyracantha coccinea**
3. Leaf blades narrowly obovate to obovate-oblanceolate (widest above the middle) or oblong to elliptic (widest at the middle), apices obtuse to rounded, truncate, or retuse, margins very shallowly to minutely serrulate, crenulate-serrate, or apiculate, less commonly apparently entire in *P. atalantioides*.

4. Leaf blades narrowly obovate to obovate-oblanceolate (widest above the middle) ..... **Pyracantha fortuneana**
4. Leaf blades oblong to elliptic (widest at the middle) ..... **Pyracantha atalantioides**

PYRACANTHA COCCINEA M. Roemer, Fam. Nat. Syn. Monogr. 3: 219. 1847.

Leaf blades narrowly elliptic to rhombic-elliptic, sometimes narrowly so, 16–40 mm x 6–14 mm, glabrous adaxially, glabrous or quickly glabrescent abaxially, apices acute, margins crenate to crenulate

ALABAMA. Hale Co.: 4.2 mi W of Faunsdale, shrub in chalk glade, 9 Sep 1968, *Kral 33085* (VDB). **LOUISIANA. St. Landry Par.**: Opelousas, spontaneous in some places, Aug 1883, *Letterman s.n.* (GH). **OKLAHOMA. Payne Co.**: ca. 0.5 mi NW of Stillwater, 10 Oct 1947, *Harn 93* (SMU). SOUTH CAROLINA. **Anderson Co.**: Murray[?], 1 Oct 1919, *Davis s.n.* (MO). **TENNESSEE. Davidson Co.**: vicinity of Nashville, no date, *Gattinger s.n.* (GH); vicinity of an old Federal fort near Nashville, low swampy meadow near New Lake, Jul 1884, *Gattinger s.n.* (GH). **Knox Co.**: 4.2 air mi ESE of downtown Knoxville, south-central section of Eastern State Wildlife Management Area, along trail, edge of cedar barren, 18 Mar 2006, *Estes 8689* (VDB). **TEXAS. Angelina Co.**: 10 mi SE of Zavalla, 4 Apr 1980, *Fritz s.n.* (BRIT). **Scurry Co.**: Dunn, sandy loam, 23 Oct 1965, *Fuller 20* (SMU).

Most records identified by the Invaders of Texas database (2009) as *P. coccinea* are *P. koidzumii* and *P. fortuneana*. Records 7673 and 7744 from Bexar Co. are *Forestiera pubescens* Nutt.; record 7672 from Bexar Co. is *Condalia hookeri* M.C. Johnston. At least 23 cultivars in the southeastern USA are derived from *P. koidzumii* (Meyer et al. 1994).

Also naturalized in British Columbia; California, District of Columbia, Georgia, Mississippi, North Carolina, New Mexico, New York, Ohio, Oregon, Pennsylvania, South Carolina, Utah, and Virginia (fide PLANTS Database). Naturalized in Missouri: Madison Co.: St. Francis River, Silver Mine Rec. Area, USFS/MDC, glade next to river, 6 Aug 1996, *Erickson 96A* (MO). A report of *P. coccinea* from Arkansas appears to represent a plant persisting from cultivation (Serviss 2009). The PLANTS Database record for Florida stems from Robertson (1974), but a voucher is not known and *P. coccinea* is regarded an "excluded species" for that state (Bruce Hansen pers. comm., 2009). Native to from southern Europe to western Asia; naturalized in Europe, South Africa, Australia, Japan.

PYRACANTHA FORTUNEANA (Maxim.) H.L. Li, J. Arnold Arbor. 25: 420. 1944.

Photinia fortuneana Maxim., Bull. Acad. Imp. Sci. St-Petersbourg 19: 179. 1873

Pyracantha crenatoserrata (Hance) Rehder, J. Arnold Arbor. 12: 72. 1931.

Leaf blades narrowly obovate to obovate-oblanceolate (widest above the middle), 15–60 mm x 5–20(–25) mm, glabrous to glabrescent on both surfaces, apices usually obtuse to rounded or truncate, margins very shallowly to minutely serrulate, crenulate-serrate, apiculate with 6–15 teeth, smaller leaves on a branch or plant with fewer teeth, very rarely a few leaves subentire.

ALABAMA. Randolph Co.: NW of Wadley on Ala. Hwy 77, shrub at edge of granite glade, Almond Outcrop, 24 Jul 1990, *Kral 77969* (VDB). **SOUTH CAROLINA. Oconee Co.**: W of the city of Walhalla, Chauga River at SC Rte 290, dense thicket along the river, 22 May 1988, *Spongberg & Boufford 17111* (GH). **TEXAS. Wood Co.**: residential area with oak, pine, elm, etc., 0.9 mi S of jct Hwy 37 and Coke Road, 10 Oct 1971, *White 10* (SMU). The Invaders of Texas database (2009) has records of *P. fortuneana* from Bexar Co. (7625, 7931, 7489, 7084?, 6471?, 6466?, 5596?), Burnet Co. (5796), and Travis Co. (1462, 8162).

Also naturalized in California (fide PLANTS Database). An image of a collection of *P. fortuneana* collection from Florida is available on the Atlas of Florida Vascular Plants (Wunderlin & Hansen 2008): Okaloosa Co. (*Wilhelm 11939*, USF) — this plant, which has regrown from the very base after being mowed along a roadside, has obovate, atypically small leaves coarsely toothed distally and it might be a growth form of *P. koidzumii*, which is more commonly naturalized in Florida. Native to China; naturalized in Australia, New Zealand, Hawaii. At least 7 cultivars in the southeastern USA are derived from *P. koidzumii* (Meyer et al. 1994).

PYRACANTHA KOIDZUMII (Hayata) Rehder, J. Arnold Arbor. 1: 261. 1920.

Cotoneaster koidzumii Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30: 101. 1911.

Leaf blades usually oblong or narrowly elliptic to elliptic-obovate, obovate, or narrowly obovate, 11–38 mm x 5–15 mm, glabrous on both surfaces, apices rounded to truncate, usually retuse, margins entire or occasionally 1–3(–5) very shallow teeth per side.

ALABAMA. Barbour Co.: Ala Rte 165, ca. 0.5 m S of Russell Co. line (ca. 0.7 mi S of Twin Springs), roadbank, 28 Apr 1959, *Wood 9064* (GH). **Crenshaw Co.**: common on fencerow along a field, blackbelt outcrop, County Hwy 11, 4 Jan 2004, *Diamond 14280* (VDB). **Houston Co.**: Dothan, S side of town, overgrown woods, 22 Nov 1992, *McDonald 5746* (VDB); Dothan, S side of town, along fence of cow pasture, 28 Nov 1992, *McDonald 5770* (VDB); ca. 0.5 mi S of Madrid along Atlanta/St. Andrews Bay RR, locally common, 14 Dec 1992, *McDonald 5780* (VDB). **Pike Co.**: Troy, E of ParK Street, fencerow in overgrown area, 7 Nov 2002, *Diamond 13727* (VDB). **Shelby Co.**: roadside of County Rd 17, by dolomite quarry near Ryan, 27 Apr 2002, *Spaulding 11229* (VDB). **FLORIDA. Jackson Co.**: ca. 3 mi W of Cypress on US Rte 90, *Taxodium* swamp and cut-over man-made savannah, roadside, 23 May 1973, *Boufford 9217* (GH); Marianna, edge of woodland, 1 Apr 1973, *Moldenke 26723* (GH, LL). **GEORGIA. Grady Co.**: E side of Cairo, RR embankment, 5 Apr 2003, *Kral 93782* (TEX, VDB). **Montgomery Co.**: 2.4 mi E of Ailey on US 280, 18 May 2004, *Stone et al. 5564* (MO). **Sumter Co.**: ca. 5.5 air mi S of Blains, fencerow, 16 Aug 1997, *Norris 6897* (VDB). **ARKANSAS. Garland Co.**: Hot Springs, ca. one-half block N of Central Avenue, 4500 block, one plant (fruiting), steep bluff with rocky soil, semidisturbed, upland woods habitat, 1 Nov 2008, *Serviss & Serviss 7396* (HEND, fide Serviss 2009). **LOUISIANA. Acadia Par.**: OPEN woods along Bayou Plaquemine ca. 2.5 mi NW of Crowley, 3 Nov 1962, *Thieret 10097* (VDB). **MISSISSIPPI. Oktibbeha Co.**: Hickory Grove, 7 mi E of Starkville, chalk outcrop, 8 May 1988, *McDaniel 29756* (VDB). **OKLAHOMA. Cleveland Co.**: 2.6 mi N on Hwy 77 from Moore Post Office, 4 Oct 1981, *Hoberecht 60* (SMU). **SOUTH CAROLINA.** Spartanburg Co.: 19 Sep 1970, *Clark 19809* (fide Clark et al. 1973). **TEXAS. Bandera Co.**: Hill Country State Natural Area, SE area of the

park, along Trail 2, West Verde Creek floodplain, 13 Nov 1993, *Lackey 343* (BRIT). **Bell Co.**: Killeen city limits, upland edge in park near intersection of Bus. 190 and South WS Young Drive, 250 m, 17 Apr 2004, Stone et al. 4202 (MO). **Blanco Co.**: Blanco State Park, along Nature Trail in SE corner of the park, 0.2 mi E of Park Rd 32, Blanco River floodplain, 27 Apr 1996, *Sanchez 1217* (BRIT). **Comal Co.**: N side of New Braunfels, road shoulder of Loop bypass, above Bleider's Creek, 17 May 1982, *Kral 68559* (VDB). **Coryell Co.**: Fort Hood Military Reservation, Main Cantonment Area, 0.1 mi E of Montague Village, along road that leads to Montague Park (abandoned), along fence line of an abandoned park, 13 Sep 2007, *Hansen 5376* (TEX). **Galveston Co.**: Bacliff [perhaps cultivated], 20 Mar 1974, *Waller 2550* (GH, TEX). **Travis Co.**: Austin, trail from Gaines Creek Nature Area at Southwest Pkwy and Republic of Texas Drive to Barton Creek Greenbelt at MoPac (Loop 1) and Capital of Texas Hwy (Loop 360), 16 Apr 1998, *Siedo 602* (TEX); Austin, Gaines Creek Nature Area and adjacent streambed, corner of Southwest Pkwy and Republic of Texas Drive, ca 1 mi W of Loop 1 (MoPac), mixed oak-juniper woodland with riparian and scrub-grassland assoc., 18 Apr 1999, *Siedo 789* (TEX); Austin, Travis Country Circle ca. 1 mi from jct of of Republic of Texas Drive and Southwest Pkwy (jct ca 1 mi W of Loop 1/MoPac), trail from pool-recreation area, riparian assoc. and adjacent mixed oak-juniper woodland, 23 Apr 1999, *Siedo 836* (TEX). Specimens at TEX from Bell, Brown, Galveston, Hays, and McCulloch counties are from cultivated plants. The Invaders of Texas database (2009) has records of *P. koidzumii* from **Bexar Co.** (7685, 7627, 7493, 7959, 7953, 7343, 5598), **Burnet Co.** (5793), **Kerr Co.** (510, 497, 606, 5931, 5928), **Liberty Co.** (588), **Tarrant Co.** (25300), **Travis Co.** (1462, 1589, 4544), and **Williamson Co.** (5834).

Also naturalized in Arizona and Florida (fide PLANTS Database). Images of *P. koidzumii* collections from Florida are available on the Atlas of Florida Vascular Plants (Wunderlin & Hansen 2008): Citrus Co. (*Lakela 25802*), Hernando Co. (*Correll 52541*), Hillsborough Co. (*King 66*), Okaloosa Co. (*Wilhelm 11495*), Pasco Co. (*Wise 249*), Suwannee Co. (*Whetstone 14335*), and Walton Co. (*Wilhelm 8091*). Naturalized in California: Ventura Co., Oak View, escape from cultivation in brushy strip under Ventura River bluff N of and near Santa Ana Blvd crossing, 23 Oct 1963, *Pollard s.n.* (TEX). Native to Taiwan; naturalized in Australia, Hawaii.

Many of the collections of *Pyracantha koidzumii* from Alabama were originally identified as *P. atalantioides*. The plant from Cleveland Co., Oklahoma, has persistently tomentose adaxial leaf surfaces (glabrous abaxially) and persistently rusty-tomentose branchlets — it perhaps is a hybrid, as typical *P. koidzumii* is glabrous on both leaf surfaces and has quickly glabrescent branchlets. Leaves with entire to subentire margins and retuse apices are characteristic of *P. koidzumii*. At least 11 cultivars in the southeastern USA are derived from *P. koidzumii* (Meyer et al. 1994).

PYRACANTHA ANGUSTIFOLIA (Franch.) C.K. Schneid., Illust. Handb. Laubholzk. 1: 761. 1906.

Cotoneaster angustifolia Franch., Pl. Delavay. 221. 1890.

Leaf blades narrowly oblong, 10–40 mm x 4–8 mm, abaxially densely and persistently tawny-puberulent to puberulent-villous, apex obtuse to rounded, margins entire.

Naturalized in California (fide PLANTS Database). Native to China; naturalized in Australia, Hawaii, New Zealand, South Africa.

PYRACANTHA ATALANTIOIDES (Hance) Stapf, Bot. Mag. 151: t. 9099. 1926.

Sportella atalantioides Hance, J. Bot. 15(175): 207. 1877.

Pyracantha discolor Rehder, J. Arnold Arbor. 1: 260. 1920.

Pyracantha gibbsii A.B. Jackson, Gard. Chron., ser. 3, 60(1566): 309, f. 133.3, 134. 1916.

Leaf blades oblong to elliptic (widest at the middle), 15–50 mm x (5–)7–20(–25) mm, glabrous to glabrescent on both surfaces, apices usually obtuse to rounded or truncate, margins shallowly to minutely crenulate-serrate or apiculate.

Not reported as naturalized in North America (fide PLANTS Database). Native to China.

Pyracantha atalantioides usually is distinguished in keys by entire to serrulate margins (Rehder 1940; Bailey 1945; Gu & Spongberg 2003). The original description by Hance noted that the margins are minutely serrulate and study of many collections from China identified as *P. atalantioides* at GH confirms that serrulate margins are characteristic of the species. In many plants, the teeth are apparent only as minute, black apiculae. Some leaves or entire or nearly so but they usually are on the same branch as distinctly serrulate or apiculate leaves. For accepted synonyms *P. discolor* and *P. gibbsii*, Rehder (1920) described the margins of the former as "usually entire, sometimes inconspicuously serrulate" and those of the latter as "coarsely crenate." Glaucescent abaxial leaf surfaces are a diagnostic feature in the Flora of China key (Gu & Spongberg 2003, apparently following Rehder 1940), but this apparently is variable and most Chinese collections at GH are not at all glaucous or glaucescent. Leaf shape appears to be the most effective way to distinguish *P. atalantioides* from *P. fortuneana* (see key above).

PYRACANTHA CRENULATA (D. Don) M. Roemer, Fam. Nat. Syn. Monogr. 3: 220. 1847.
Mespilus crenulata D. Don, Prodr. Fl. Nepal. 238. 1825.

Naturalized in California (fide PLANTS). Native to China, Bhutan, India, Kashmir, Myanmar, Nepal; naturalized in South Africa, Australia, New Zealand, Japan, Europe.

Pyracantha crenulata is included in this account because as represented by Asian collections at GH, it appears to be indistinguishable from *P. fortuneana*. Collections identified as one or the other species have glabrous, obovate to oblanceolate leaves with margins crenate to crenulate and apices obtuse to rounded or truncate and often apiculate. In the Flora of China (Gu & Spongberg 2003), the two taxa are separated by leaf shape (*P. crenulata*, blades "oblong or oblanceolate, rarely ovate-lanceolate, 2–7 × 0.8–1.8 cm"; vs. *P. fortuneana*, blades "usually obovate to obovate-oblong, 1.5–6 × 0.5–2 cm"). Folders as currently identified at GH do not reflect even this subtle difference, nor was I able to sort the collections in a meaningful way. If indeed there is no difference, the name *P. crenulata* would have priority, and it is a taxon generally recognized as having a wider native distribution. Until a more authoritative assessment is available, continued use here of *P. fortuneana* is arbitrary.

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LITERATURE CITED

Bailey, L.H. 1945. Manual of Cultivated Plants (rev. ed.). MacMillan, New York.

Clark, R.C., R.W. Powell, Jr., and C.G. Childress. 1973. Vascular plants in Spartanburg County, South Carolina, new to the state, the Carolinas or the southeastern United States. Castanea 38: 297–304.

Correll, D.S. and M.C. Johnston. 1970. Manual of the Vascular Plants of Texas. Texas Research Foundation, Renner, Texas.

Egolf, D.R. and A.O. Andrick. 1995. A Checklist of *Pyracantha* Cultivars. U.S. National Arbor. Contr. No. 8. U.S. Govt. Printing Office, Washington.

Gu, C. and S.A. Spongberg. 2003. *Pyracantha*. Flora of China 9: 108–111. <http://flora.huh.harvard.edu/china/PDF/PDF09/Pyracantha.PDF>

Invaders of Texas. 2009. A Citizen Science Program to Detect and Report Invasive Species. TexasInvasives.org. <http://www.texasinvasives.org> Accessed July 2009.

Johnston, M.C. 1990. The vascular plants of Texas: A list, up-dating the "Manual of the Vascular Plants of Texas" (ed. 2). Published by the author.

Meyer, F.G., P.M. Mazzeo, and D.H. Voss. 1994. A Catalog of Cultivated Woody Plants of the Southeastern United States. USDA Agricultural Research Service, U.S. National Arboretum Contr. No. 7. U.S. Govt. Printing Office, Washington.

Nesom, G.L. 2009a. Texas plants: Non-native species recently discovered to be naturalized in the state; Non-native species in the state, complete list. <http://guynesom.com/Texasplantsweb.htm>

Nesom, G.L. 2009b (in press). Assessment of invasiveness and ecological impact in non-native species of Texas. J. Bot. Res. Inst. Texas 3(2).

Rehder, A. 1920. New species, varieties, and combinations from the herbarium and the collections of the Arnold Arboretum. J. Arnold Arb. 1: 254–263.

Rehder, A. 1940. Manual of Cultivated Trees and Shrubs (ed. 2). McMillan Co., New York.

Robertson, K.R. 1974. The genera of Rosaceae in the southeastern United States. J. Arnold Arbor. 55: 303–332, 344–401, 611–622.

Serviss, B.E. 2009. *Pyracantha koidzumii* (Rosaceae) new to the Arkansas flora. J. Bot. Res. Inst. Texas 3: 319–321.

Turner, B.L., H. Nichols, G. Denny, and O. Doron. 2003. Atlas of the Vascular Plants of Texas. Vol. I—Dicots; Vol. II—Monocots. Sida, Bot. Misc. 24, 1 and 2.

USDA, NRCS. 2009. The PLANTS Database. National Plant Data Center, Baton Rouge, LA <http://plants.usda.gov>

Wunderlin, R.P., and B.F. Hansen. 2008. Atlas of Florida Vascular Plants [S.M. Landry and K.N. Campbell (application development), Florida Center for Community Design and Research.] Institute for Systematic Botany, University of South Florida, Tampa. <http://www.plantatlas.usf.edu/>

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